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Perception of Mobile Mental Health Apps: Examining the Functionality and Perception of Mental Health Apps

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Perception of Mobile Mental Health Apps

Examining the Functionality and Perception of Mental Health Apps

By

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An Honors Thesis Submitted in Partial Fulfillment of the
Requirements for Graduation from the
Western Oregon University Honors Program

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Abstract

Awareness of the importance of mental health is growing rapidly in modern society; however, the rates of depression, anxiety, and stress have also grown exponentially. In recent years, there have been tremendous strides in mental health apps on mobile devices; yet, very little research has been done to determine if mobile apps could help the general population decrease mental health issues. Considering new health-related devices, most of the recent developments concern symptoms relating to physical exercise. Devices targeting proper mental health care are not nearly as well known. This honors senior project reviews the findings of recent empirical studies as well as review the user-reviews of specified mental health apps. An experimental study was also conducted on people's perception of mental health apps being used as a primary form of treatment for people who may suffer from minor mental health issues. This paper (1) collectively evaluates and compares the perception of mental health apps and (2) overviews the effects of using mental health mobile apps as a way to decrease stress, depression and anxiety symptoms to improve mental well being.

Introduction

Public mental health disorders and issues have grown and expanded in modern society. The sad reality is not every person who suffers is able, or knows how to receive help. In recent years, the rates of undiagnosed major depression has risen at a staggering rate, affecting at least 18.1% of adolescents (Lu, 2019). Additionally, the rates of mood and anxiety pathology in undergraduate students has also increased, including feelings of anger, depression, anxiety, suicide ideation (Duffy, Twenge, & Joiner, 2019). Mental health is an important factor in every person's life; it is becoming increasingly more important to evaluate and assess one's own mental health. Additionally, with the rates of mental health issues, the use of technology has also boomed, with seemingly millions of people owning and regularly using a mobile phone. Mobile phones help people do many things that once was simply a pleasant thought and serves as a tool that can be used for almost any given situation. With such a tool, the question arises: could mobile devices be used to help improve the public's overall mental health?

Given the rising rates of mental health issues in adolescents and young adults, there is a tremendous need for mental health professionals to help those who seek out help. This requires additional time for people to become professionally trained and educated; however, there are only so many people that a professional has time to see. It is not unheard of for some clients to be put

on a waitlist – which can take weeks, or even months – to be seen for in-person practices. Being waitlisted when seeking help is a harsh truth: according to the National Council for Behavioral Health, for every day of being on a waitlist, an average of one percent of patients will withdraw from treatment (Dampier, 2018). In sum, the reality is that not every patient is able to meet with a professional, regardless of the circumstances.

Therapy Practices

Before diving into the analysis and evaluation of prior studies and user reports of Mental Health apps (MHapp), it is important to understand the therapy practices that were utilized or evaluated in this study. The traditional therapy practices discussed in this project are known as Cognitive Behavioral Therapy (CBT), Acceptance and Commitment Therapy (ACT), Mindfulness-Based Cognitive Therapy (MCBT), and Dialectical Behavioral Therapy (DBT). Each form of therapy is designed to address different mental challenges.

Cognitive Behavioral Therapy (CBT)

Cognitive Behavioral Therapy (CBT) is a form of psychological treatment that emphasizes changing one's thinking and behavioral patterns. CBT is often used for a variety of reasons, including depression, anxiety disorders, alcohol and drug use problems, marital problems, eating disorders and severe mental illness.

The theory behind CBT is that it is not events themselves that may upset us, but rather the meanings that one bestows on said event; hence, the theory is designed to adjust one's thinking.

CBT techniques may vary based on the need of the person receiving treatment. A CBT technique known as *Cognitive Restructuring* can be used as an example of implementation (Pietrangelo, 2019). Suppose that someone tends to overgeneralize and always assume the worst will happen. In order to help adjust this thinking pattern, the person having these thought processes must first be able to identify these as negative thought patterns. These negative thought patterns could influence one's actions, inhibiting their quality of life. After identifying these negative thought patterns, the person may then create a thought record. For every negative thought that may come, the person may write out the thought onto the record, as well as adding their emotions, behavior influenced by thought, and most significantly, an alternative thought. The alternative thought is significant as it is designed to help the person identify a different thought they may have.

One example could be a person not getting a job after one interview, and always thinking that they cannot do well at interviews, therefore leading them to avoid future interviews. Once this person recognizes that after every job opens up, they avoid the interview, the person may write a thought record. For

instance, the negative thought could be “I failed my last interview. I don’t think I could ever have a good interview”, and the alternative thought could look something like “I didn’t do my best last time, but I know I am capable of doing a good job”. These steps help people recognize their own negative thought patterns and work on changing their interpretations of successes and failures.’

Acceptance and Commitment Theory (ACT)

Acceptance and Commitment therapy (ACT) is a form of psychological treatment where people learn to accept and embrace their inner thoughts and emotions instead of avoiding and hiding them. ACT can effectively help with workplace stress, test anxiety, depression, social anxiety disorder, and obsessive-compulsive disorder. The theory of ACT does not attempt to change unwanted thoughts (as CBT does) but rather encourages people to stop fighting their emotions and practice more confident and optimistic behavior (Chowdhury, 2020)

ACT utilizes mindfulness techniques to help people refocus their attention on the present. A simple mindfulness exercise can look like a therapist asking a client to close their eyes and focus on their breathing. Asking the client to pay attention to the sensation they feel when they inhale, and exhale is an example to help the client keep their mind from wandering and focusing on their behavior at the present time. A client may have a thought, such as questioning how the

practice would help in the future; however, this thought process displays that those thoughts take away the clients attention to what they are doing at the moment. Being aware of those thoughts while being able to bring their attention back to the exercise is a small demonstration of how to be aware of one's thoughts without being preoccupied with stressful thoughts.

Mindfulness, or Mindfulness-Based Cognitive Therapy (MBCT)

Mindfulness, or Mindfulness-Based Cognitive Therapy (MBCT) is a form of treatment designed to help prevent cognitive and behavioral relapse. MBCT integrates the practices of cognitive therapy and meditative practices and attempts to help clients adapt better reactions to difficult situations. MBCT can be best utilized to help with recurrent anxiety and depression. The theory of MBCT is to create a better understanding of one's own thoughts and manage those thoughts in order to better address challenges and feel relief from distressors. (Sipe & Eisendrath, 2012).

Similarly to the example of ACT implementation, an example of MBCT can be a client focusing on their internal thoughts and feelings in the present moment. After gaining control on one's thoughts, the client may then focus on nothing else rather than their breathing, focusing on the sensations of inhaling and exhaling. This exercise helps the client avoid the negative thoughts, which primarily take place in either the past or the future and helps the client focus on

the present moment. An example of this could be removing all distractions, recognizing the thoughts of the future (e.g., “I need to do laundry”) and recentering one’s attention to their thoughts and feelings at the present time, focusing on breathing and intentionally bringing an open and accepting mindset to the present.

Dialectical Behavior Therapy (DBT)

Dialectical Behavior Therapy (DBT) is a form of psychological treatment where clients learn to cope and regulate with extreme or unstable emotions and harmful behaviors. Initially designed to treat borderline personality disorder, DBT can help those who suffer from depression, binge-eating, bipolar disorder, post-traumatic-stress disorder, substance abuse, and bulimia. Uniquely, DBT can be split into four modules: Mindfulness (skills to help individuals focus on the present and attend to what is happening), interpersonal effectiveness (concerns the skills related to interaction with others), distress tolerance (skills relating to accepting, tolerating, and learning from suffering), and emotion regulation (identifying and changing thoughts and emotions; Ackerman, 2020). As if to take parts of the previously mentioned therapy styles, each module is designed to address a specific problem a client may be facing.

To elaborate how DBT can be implemented, an example can be made within the interpersonal effectiveness module, but first, it is important to

understand the significance of this module. The interpersonal effectiveness module is designed to help clients learn to get along with others while also asserting their own needs. Within this module, there are a few acronyms taught to help remind clients what it is they desire to get out of the relationship with a person. The acronym G.I.V.E is one example, which reminds clients that to build relationships with people, they must be gentle, interested, validate, and easy.

User Reports / Marketing

A crucial factor in determining if MHapps can be effective is to understand what the user of the MHapp had to say about their experience. It is also important to evaluate how these MHapps market themselves, knowing what practices the MHapps claim to use, and how they are implemented. Evaluating publicly available MHapps is crucial in the study of MHapps as users may speak out about their experience, whether positive or negative, as well as provide insight as to how MHapps may implement different practices.

For this project, user reports were collected from seven different publicly available MHapps. The selection criteria for these apps required an existing therapy practice mentioned in the description of the app, including CBT, DBT, and ACT. The selected apps were found via the Apple app store. Additionally, it is important to understand that there are limitations when analyzing MHapp

statistics, such as being unable to account for the total number of downloads, the demographics of the users, and more.

CBT Reviews

When searching for an MHapp, it is fairly easy to find an MHapp that claims to utilize CBT, as each MHapp selected in the current study claims to use CBT to some extent. Although uncertain as to why this may be, it is important to understand that CBT may be used to treat a wide variety of mental health challenges.

Within the descriptions of each MHapp, CBT was mentioned being used in the delivery of the practice, however, how it was being delivered was not as clear. The majority of the MHapps stating that CBT was utilized into the app's functions simply claimed that techniques and tools were based in CBT. No specific technique or tool was mentioned for most; however, this was not the case for all MHapps as some techniques and tools were listed, such as the CBT thought exercise and journaling and thought records.

ACT Reviews

There were fewer MHapps that claimed to use ACT techniques, however, MHapps utilizing ACT provided more insight as to how ACT would be used, as opposed to MHapps using CBT. MHapps utilizing ACT techniques provided a clear

breakdown of the functions of the MHapp, while including the tools used from ACT and other practices. For example, the MHapp What's Up? provided different techniques, such as a grounding game (a game designed to have participants focus on the present time rather than the future or past) and a catastrophe scale, a scale by which helps clients put their problems into a better perspective.

MHapps utilizing ACT techniques provided more insight as to what techniques were being utilized, however, given that each MHapp also claimed to also use CBT techniques, there was no indication of which techniques were CBT-based or ACT-based.

DBT Reviews

MHapps utilizing DBT-based techniques showed similar reviews to MHapps utilizing ACT-based practices. Very few MHapps claim to utilize DBT, and even fewer specify as to what techniques are specifically utilized from DBT. For example, the MHapp's Youper and Woebot claimed to utilize both CBT and DBT, however, it did not specify nor accredit techniques used to either practice; it is not clear what techniques belong to CBT and DBT.

In the descriptions of MHapps claiming to utilize DBT-based techniques, no exercises were mentioned to be specific to DBT, however, mental health symptoms such as depression, anxiety, relationship problems, procrastination, loneliness, grief, addiction, and pain management were highlighted to be areas

that the MHapp helps people improve. Although MHapps seem to fail to attribute which techniques are accredited to the proper therapy, it is important to understand that the targeted areas to improve in these MHapps closely align with what DBT is used to help treat.

The Current Study

From prior findings, it is seen on multiple occasions that mobile mental health apps have some positive effects on mental health, however, these findings are new, and more experimental research is warranted. Among the minimal findings, improvements in well-being and decreased feelings of depression have been common. It is also important to understand that although benefits may be apparent, there was a lack of statistical significance across past empirical studies, displaying that there was no indisputable evidence that MHapps may increase one's mental health. In addition to the empirical studies, MHapps attempt to mimic existing therapy practice. From the user reports, it can be seen that MHapps are marketed as delivering techniques in different forms; however, the tools used are often not explained or not clear as to which therapy practice the tools are used from.

As MHapps are a relatively new research topic, the intent of conducting this study was to capture college student's perception of MHapps as a means to receive mental health help. User reports and previous empirical studies have

demonstrated that there is potential use for MHapps being used to improve mental health, however, the public may not be aware of these past studies, and may not know of the effects of MHapps on mental health. Understanding the perception of MHapps and comparing those perceptions to both empirical and non-empirical findings may display how much the public knows about MHapps.

The current study tested two hypotheses concerning individuals' perception of mental health apps: (1) both forms of treatment will be perceived to be effective in each given circumstance (all scores above 'neither agree nor disagree'), and (2) face-to-face interaction will be perceived as slightly more effective than mental health apps. Notably, this differs from previous work (discussed below with the current findings) because the participants did not use the apps themselves, but rather indicated the perceived effectiveness of MHapps to traditional face-to-face treatments.

Participants

Undergraduate students between the ages of 18 and 33 ($M = 22.35$; $SD = 4.64$) were recruited from Western Oregon University. Participants were recruited through the psychology department via SONA, where students were awarded extra credit points for their courses. Of the 17 total participants recruited, 13 were female, and 70.59% were caucasian.

Measures

Participants were asked to read and complete the consent form provided, as well as a demographics survey. Participants then were to randomly select a number out of a hat. Based on the number randomly picked, participants were given one of two stories where a civilian was experiencing mental distress and wished to find a way to improve their mental health. One story resulted in the civilian seeking mental health help through a mobile app (see appendix A) and the other resulted in the civilian seeking mental health health with a counselor (see appendix B). Participants' perception of therapy effectiveness was measured using a 5 item question series rated on a Likert-scale (see appendix C).

Statements on the Likert-scale were designed to assess characteristics of each form of treatment, such as the statement “Having in-person contact is significant when trying to improve mental health”. Scores were to indicate what participants considered significant or important in the treatment of mental health.

Procedure

All research procedures took place in one sitting lasting no longer than 15 minutes to complete. Participants were recruited via SONA in advance through the psychology department of Western Oregon University. The study was conducted in Hamersly Library, where participants went to the designated study room, where they were then given an informed consent form and demographics

sheet to read, sign, and complete. Participants were then randomly assigned to one of the two stories by selecting a number from a hat. Participants who drew an even number were given a story where a fictional character was having minor mental health issues, and later decides to seek help through a therapist involving face-to-face interaction and practices. Participants who drew an odd number were given a near identical story, where the only difference was the character sought out help through a mental health app. After completing the reading, the participants were immediately given a 5-question Likert-scale to record their thoughts on the effectiveness of the treatment that was received in the story. Participants were then offered a debriefing statement that explains the intent and purpose of conducting the study. Participants were also given the opportunity to ask any questions, if desired.

Results

To test the hypothesis that participants would perceive both forms of treatments as beneficial and that in person counseling would be perceived as more effective than mobile apps, an independent samples t-test was used on the number of statements rated across both conditions. Follow-up tests on each individual question asked within the survey revealed a trend towards a significant difference for question three (Figure 1) in terms of the importance of having in-person contact when helping with mental health ($t(15) = -1.6, p = 0.13$, two-

tailed, $r^2 = .14$). Although the result was not significant, the mean scores for the counseling group were higher than the mean scores for the mobile app group for every question (see Table 1). No significant results were observed.

Discussion

The present study sought to examine two things: the overall perception of both counseling and mobile apps as a means to help with mental health and the perception of the effectiveness of both treatments compared to each other. The goal was to investigate if mobile apps could be viewed as a way to help with mental health, and compare the perceptions to the perceptions of a professional mental health counselor. In regard to the first goal, there were no significant results in terms of both conditions being perceived as effective practices to aid mental health.

Upon running follow-up tests, it was found that one question within the Likert scales emerged as steadily trending towards significance: question three concerning having in person contact as being important when trying to improve mental health (see figure 1). The question emphasized that an important part in the treatment of mental health is to have someone else involved. With the trending significance, this suggests potentially important information: both counseling and mobile apps rated fairly highly on the statement. This suggests

that each group may view in-person contact as a crucial piece in improving mental health.

This study was unique from previous related research. The findings of this study suggested certain elements of effective mental health improvements involved in-person contact; however, by the mean scores (see Table 1), there is some indication that mobile apps may be slightly effective. Prior research looks at the numerous interactions between a user and a mobile mental health app. Previous research from Bakker and Rickard (2018) suggested that interacting with a self-monitoring app can help reduce symptoms of depression and anxiety as well as increase well-being. The results of the present study suggest that perceptions of undergraduate students do not fully support their findings. Additionally, results from the present do not fully support the findings from Levin, Haeger, Navarro, and Cruz (2018) where the results from their study found that a mobile app using acceptance and commitment therapy (ACT) indicated significant improvements. Moreover, prior research done by Krafft, Potts, Schoendorff, and Levin (2019) found that those seeking help received improvements when using a mobile app with ACT practices. The results of the current study again indicate that the perceptions do not fully support their findings.

Implications of the present study may show contrasts between the perception of undergraduate students and the general field of research for mobile mental health apps. Prior research done by Gindidis, Stewart, and Roodenburg, (2019) found results indicating that mobile apps may be beneficial in the treatment of mental health. These findings were not fully supported by the results of the present study. Similarly, Linardon, Cuijpers, Carlbring, Messer, Fuller-Tyszkiewicz (2019) found that mobile apps could benefit common mental health-related issues. In contrast, the current study did not support these findings. An additional systematic review and meta-analysis found that using mobile apps to improve mental health and stress symptoms may be beneficial for short-term use (Stratton et. al., 2017); however, it is important to consider participants in this study never had exposure to the MHapps and may not fully understand their benefits like those individuals in prior research

Additionally, results from a separate systematic review indicated that mobile apps have potential to improve mental health, however many of available mental health apps are not clinically validated evidence (Wang, Varma, & Prosperi, 2018). The potential for mobile apps to have a positive effect despite not having clinically validated evidence is slightly supported by the trend to believe in-person therapy is superior to MHapps in treating mental health.

Limitations and Future Research

The current study contained the following limitations. The first limitation is the statements made on the Likert-scale questionnaire. The statements made took into account only a small amount of characteristics of counseling and mobile apps, such as in-person contact, which may not fully encompass the full treatment of either condition. Having more statements on the Likert-scale may improve the accuracy of capturing the perception of undergraduate students, as well as possibly highlighting what characteristics of treatment are viewed as important.

A second limitation is the story for which each group was given. The story that participants read prior to completing the likert-scale questionnaire emphasized more about the artificial symptoms rather than the treatment options. Creating a story that focuses more on the characteristics of the treatments, such as the pros and cons of each form of treatment, may result in more significant findings.

Future studies should consider adding more statements and questions that pertain to more characteristics in treatment options when creating the questionnaire. Additionally, future studies should create stories that emphasize more on the treatment characteristics than the precursor for receiving

treatment. Adjusting for these limitations could result in more significant findings to build upon within the field of mental health.

Conclusion

It is evident that more research is necessary to further examine the functionality of MHapps. Although no conclusive evidence or significance has been found, delivering therapeutic practices on a regular basis has shown potential to be a tool for some as a means to improve mental health. From the few empirical studies completed, many instances showed minor improvements for some with common mental health issues (i.e. depression, anxiety, stress). Similarly, users of already publicly available MHapps have voiced their appreciation for such MHapps, as many have also indicated improvements in their mental health; however, from the sample collected, it is suggested that the perception of MHapps is still viewed as less competent to assist in mental health improvement.

The results discovered within this project have few implications for the field of MHapps research. Although no significant results were present in the current study, this does not mean that the function of MHapps is irrelevant, but rather more research is necessary to discover what those effects may be. With a number of limitations, results may be skewed, thus requiring more research to be conducted to further understand the functionality of MHapps. Nonetheless, this

experiment represents an important step or future research on mental health related apps.

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Appendix A

Instructions: Carefully read the short story. Afterwards, you will be asked to answer questions in regards to the reading.

After another long tuesday at the office, Mr. Rodgers wanted nothing more than to just lie in his bed and be done with the day. It had already felt like a week has past, but Mr. Rodgers would have to rest and go back to work the next day. Every day for the last 3 months have felt like a never ending cycle of stress at work, go to bed, and repeat.

Mr. Rodgers did not enjoy his job at the office. He was already under a lot of stress in his role, however, he was asked to help pick up the slack after two of his coworkers suddenly quit. He once was working 40 hour weeks, but is now working 50 or more hours a week. Despite the additional stress and time at a job he did not enjoy, he found that he'd prefer to be at work than at home.

Home was not a comfortable place for Mr. Rodgers. Although living in a modern home, he did not enjoy living in a quiet and empty house. Being there often made Mr. Rodgers feel lonely and isolated. He often felt like meeting people was a difficult task, especially meeting people with the same interests as him, so the feelings of being isolated constantly nagged at him.

Feeling as though work was all that he had, Mr. Rodgers often felt tired, sad, and empty. After another 2 weeks pass, Mr. Rodgers was noticed his appetite had reduced, as well as his quality of sleep. With all of these symptoms, he decided to search online to see if he was suffering any type of mental health issue. Mr. Rodgers found that all of his symptoms were similar to the symptoms of depression, so he decided to find a way to receive mental health help.

He finds an app on his mobile phone that claimed to use different therapy techniques. He also discovers a local mental health counselor nearby. He is uncertain with which he would prefer to use. After much thought, he decides to use the app because it is conveniently on his phone and he can access it at any time. He doesn't know if it would be effective, but he decides to give it a try.

Appendix B

Instructions: Carefully read the short story. Afterwards, you will be asked to answer questions in regards to the reading.

After another long tuesday at the office, Mr. Rodgers wanted nothing more than to just lie in his bed and be done with the day. It had already felt like a week has past, but Mr. Rodgers would have to rest and go back to work the next day. Every day for the last 3 months have felt like a never ending cycle of stress at work, go to bed, and repeat.

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He finds an app on his mobile phone that claimed to use different therapy techniques. He also discovers a local mental health counselor nearby. He is uncertain with which he would prefer to use. After much thought, he decides to see the counselor. Despite its convenience and availability, he is unsure of the apps effectiveness and decides to not try it.

Appendix C

For your answers, please circle one response per question

1. Using either form of treatment (seeking a professional counselor or a mobile app) would be beneficial.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. Using a mobile app to improve mental health may be more beneficial than counseling.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

3. Having in-person contact is significant when trying to improve mental health.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. Using apps to improve mental health may be beneficial for short term use.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

5. Therapeutic techniques and practices can be taught and used through a mobile app.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

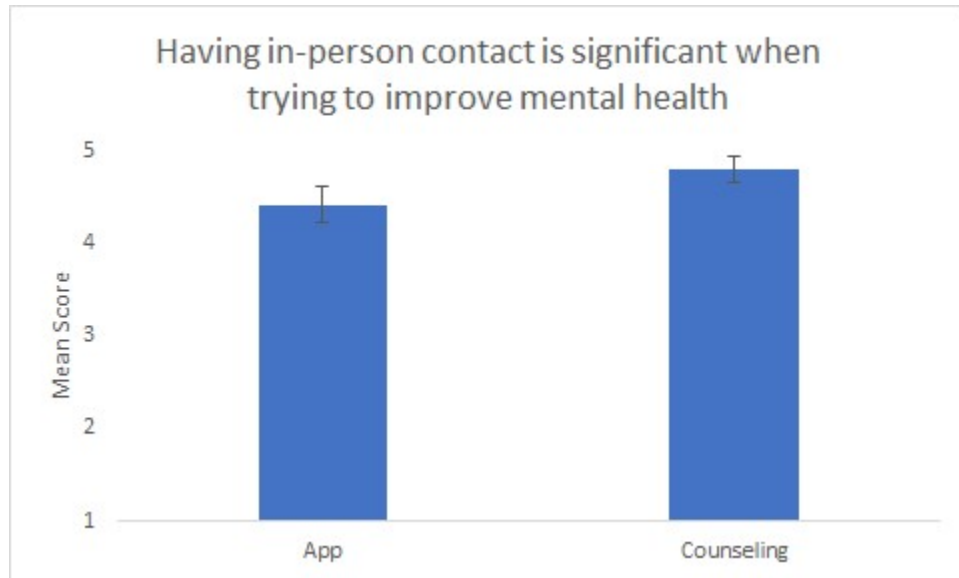


Figure 1. The ratings of both app and counseling groups when calculating the means for question three. Standard errors are displayed in the figure by the error bars within each column on the graph.